# Appendix: Common and Scientific Names of Species Discussed in the Document

| Common name | Scientific name |
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| | |
| **Flora:** | |
| Aspen | *Populus* spp |
| Firs | *Abies* spp |
| Hemlock | *Tsuga* spp |
| | |
| Douglas-fir | *Pseudotsuga menziesii* (Mirbel) Franco. |
| Grand fir | *Abies grandis (*Dougl. ex D. Don) Lindl. |
| Ponderosa pine | *Pinus ponderosa* (Dougl. Ex Laws.) |
| Tanoak | *Lithocarpus* Blume |
| Western hemlock | *Tsuga heterophylla* (Raf.) Sarg. |
| Western redcedar | *Thuja plicata* (Donn ex D.Don) |
| | |
| | |
| **Aquatic Species:** | |
| **Fish—** | |
| Pacific salmon | *Oncorhynchus* spp |
| | |
| Bull trout | *Salvelinus confluentus* |
| Coastal cutthroat trout | *Oncorhynchus clarkii clarkii* |
| Chinook salmon | *Oncorhynchus tshawytscha* |
| Chum salmon | *Oncorhynchus keta* |
| Coho salmon | *Oncorhynchus kisutch* |
| Cutthroat trout | *Oncorhynchus clarkii* |
| Lost River sucker | *Deltistes luxatus* |
| Shortnose sucker | *Chasmistes brevirostris* |
| Steelhead | *Oncorhynchus mykis* |
| Oregon chub | *Oregonichthys crameri* |
| | |
| **Amphibians and Reptiles—** | |
| del Norte salamander | *Plethodon elongatus* |
| | |
| | |
| **Terrestrial species:** | |
| **Birds—** | |
| Jays | *Cyanocitta* spp |
| Ravens | *Corvus* spp |
| | |
| Barred owl | *Strix varia* |
| Marbled murrelet | *Brachyramphus marmoratus* |

| | |
|---|---|
| Northern spotted owl | *Strix occidentalis caurina* |
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| **Mammals** | |
| Wood rats | *Neotoma* spp. |
| | |
| Red tree vole | *Arborimus longicaudus* |
| | |
| | |
| **Disease** | |
| Sudden Oak Death | *Phytophthora ramorum* |
| | |

**Glossary Table 1--Major classification schemes used to describe forest developmental stages and associated characteristics. Characteristics are illustrated from various ecosystem perspectives by using a Douglas-fir *(Pseudotsuga menziesii*) dominated sere growing in the western hemlock (*Tsuga heterophylla*) zone (Franklin and Dyrness 1988). Characteristics will vary widely based on site location, disturbance history, management, and in other forest types. This table was developed by B. Kerns (see Monserud et al. 2003 Compatible Forest Management: 28-32).**

| Major classification systems and characteristics for forest developmental stages | | | |
|---|---|---|---|
| **Ecosystem perspective →** / Forest development stage ↓ | **Ecological structure and process** | **Wildlife habitat** | **Timber production** |
| First | Reorganization (Bormann and Likens 1979)<br>Stand initiation (Oliver and Larson 1990)<br>Establishment (Spies and Franklin 1991) Ecosystem initiation (Carey and Curtis 1996)<br>Disturbance/legacy creation and cohort establishment (Franklin et al. 2002) | Grass/Forb-Open, Grass/Forb-Closed, Shrub/Seedling-Open, Shrub/Seedling-Closed, Sapling/Pole-Open (O'Neil et al. 2001) | Seedling (Haynes 2003)<br>Early seral (FEMAT 1993) |
| *Characteristics* | • Pioneer tree cohort established with a range of regeneration densities<br>• Biological legacies present depending on initial disturbance type, intensity and management<br>• Rapid biomass accumulation<br>• Above- and below-ground resource availability high<br>• Nutrient transfer from soil to biomass<br>• Possible introduction and spread of exotic/invasive species | • Biodiversity high<br>• Herb and shrub understory may be abundant or persistent<br>• Open canopy conditions important for birds and mammals<br>• Biological legacies retained provide habitat | Stand age typically 0-15 years<br>Single species tree cohort densely seeded or planted, typically with genetically altered stock<br>Competing vegetation controlled or removed<br>Precommercial<br>Includes first tree age class of seedlings (average age of 5 years) |
| Second | Aggradation (Bormann and Likens 1979)<br>Stem (Oliver and Larson 1990)<br>Thinning (Spies and Franklin 1991) Competitive exclusion (Carey and Curtis 1996) | Sapling/Pole-Moderate, Sapling/Pole-Closed (O'Neil et al. 2001) | Poles and saplings (Haynes 2003)<br>Mid-seral (FEMAT 1993) |

| | | | |
|---|---|---|---|
| | Canopy closure (Franklin et al 2002) | | |
| *Characteristics* | • Taller vegetation becomes dominant<br>• Leaf area and biomass accumulate<br>• Canopies close on some sites—rate depends on regeneration density and site productivity<br>• Few snags and coarse woody debris (CWD) in managed stands<br>• Rapid understory environment changes<br>• Resource availability decline | • Biodiversity declines<br>• Depending on canopy structure, herb and shrub understory abundance declines<br>• Amphibians associated with closed canopies<br>• Minimize stage through precommercial and variable density thinning | • Stand age typically 15 to 35 years<br>• Conventional precommercial thinning to maintain evenly spaced trees and promote tree growth<br>• Pole and sapling sized trees usually not merchantable<br>• Commercial thinning can occur depending on market conditions |
| Third | Aggradation (Bormann and Likens 1979)<br>Stem exclusion (Oliver and Larson 1990)<br>Thinning (Spies and Franklin 1991)<br>Competitive exclusion (Carey and Curtis 1996)<br>Biomass accumulation/competitive exclusion (Franklin et al. 2002) | Small Tree-Single Story-Moderate, Small Tree-Single Story-Closed, Medium Tree-Single Story-Moderate, Medium Tree-Single Story-Closed, Large Tree-Single Story-Moderate, Large Tree-Single Story-Closed (O'Neil et al. 2001) | Young (Haynes 2003)<br>Late seral (FEMAT 1993) |
| *Characteristics* | • Woody biomass development<br>• Tree crown differentiation and lower branch pruning<br>• Low resource availability early, increases later<br>• Density dependant tree mortality with high stand density<br>• Few snags and CWD<br>• Competitive exclusion of many organisms | • Low biodiversity<br>• Depending on canopy structure, herb and shrub abundance may be low<br>• Amphibians associated with closed canopies<br>• Minimize stage through precommercial and variable density thinning | • Stand age typically 45 to 75 years<br>• Pioneer tree cohort dominates site<br>• Sawtimber and nonsawtimber size trees<br>• Conventionally thought of as the culmination of mean annual increment<br>• For many private industrial landowners, may reflect typical rotation lengths and stand developments ends |
| Fourth | Transition (Bormann and Likens 1979)<br>Understory reinitiation (Oliver and Larson 1990)<br>Mature (Spies and Franklin 1991)<br>Understory reinitiation, developed understory (Carey and Curtis)<br>Maturation (Franklin et al. 2002) | Small Tree-Single Story-Open, Medium Tree-Single Story-Open, Large Tree-Single Story-Open (O'Neil et al. 2001) | Mature seral (FEMAT 1993)<br>Mature (Haynes 2003A) |

| | | | |
|---|---|---|---|
| *Characteristics* | • Maximum height and crown spread of pioneer tree cohort<br>• Minimal coarse woody debris<br>• Heterogeneous resource availability<br>• Shift to density independent mortality<br>• Sub-lethal tree damage produces greater individual tree conditions and niche diversification | • Extended rotations (> 80 years) to provide habitat<br>• Re-establishment of understory species, including shade-tolerant conifers<br>• Increase in diversity of fauna, especially with multi-stored canopies<br>• Increase habitat through commercial thinning and CWD management | • Stand age typically 85 to 135 years<br>• Less common stage on private industrial lands<br>• Composed mostly of sawtimber size trees<br>• Conventionally thought of as over culmination of mean annual increment |
| Fifth | Steady-state (Bormann and Likens 1979)<br>Old-growth (Oliver and Larson 1990)<br>Transition and shifting-gap (Spies and Franklin 1996)<br>Botanically diverse, niche diversification fully functional (managed) and old-growth (Carey and Curtis 1996)<br>Vertical diversification, horizontal diversification and pioneer cohort loss (Franklin et al. 2002) | Small Tree-Multistory-Open, Small Tree-Multistory-Moderate, Small Tree-Multistory-Closed, Medium Tree-Multistory-Open, Medium Tree-Multistory-Moderate, Medium Tree-Multistory-Closed, Large Tree-Multistory-Open, Large Tree-Multistory-Moderate, Large Tree-Multistory-Closed, Giant Tree-Multistory (O'Neil et al. 2001) | Mature (FEMAT 1993)<br>Old mature stage (Haynes 2003 RPA) |
| *Characteristics* | • Slow decline in aboveground biomass<br>• Many substages for long-lived species<br>• Development of late successional and old-growth attributes (Spies and Franklin 1996)<br>• Density independent mortality increases, large, persistent gaps may form<br>• Accelerated generation of cwd<br>• Highly heterogeneous resource availability<br>• Sub-lethal tree damage continues<br>• Loss of dominants (800 to 1300 yrs.) | • Extended rotations to provide habitat<br>• Large trees, multiple stories, snags, CWD, and closed canopies create habitats for numerous species<br>• Faunal diversity, especially birds and mammals is high | • Stand age typically more than 145 years<br>• Uncommon stage on private industrial lands<br>• Conventionally thought of as past the point where net annual growth has peaked |

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## NWFP GLOSSARY

This glossary has evolved from the Forest Ecosystem Management Assessment Team report (1993).

**Adaptive management**—The process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans, and using the resulting information to improve the plans.

**Adaptive management areas**—Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.

**Age class**—A management classification using the age of a stand of trees.

**Alluvial**—Originated through the transport by and deposition from running water.

**Aquatic ecosystem**—Any body of water, such as a stream, lake or estuary, and all organisms and nonliving components within it, functioning as a natural system.

**Aquatic habitat**—Habitat that occurs in free water.

**Associated species**—A species found to be numerically more abundant in a particular forest successional stage or type compared to other areas.

**Baseline**—The starting point for analysis of environmental consequences. This may be the conditions at a point in time (for example, when inventory data are collected) or may be the average of a set of data collected over a specified period).

**Biological diversity**—Various life forms and processes, including a complexity of species, communities, gene pools, and ecological functions.

**Biomass**—The total quantity (at any given time) of living organisms of one or more species per unit of space (species biomass), or of all the species in a biotic community (community biomass).

**Blowdown**—Trees felled by high winds.

**Board foot**—Lumber or timber measurement term. The amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide.

**Breast height**—A standard height from ground level for recording diameter, girth, or basal area of a tree, generally 4.5 feet.

**Bureau of Land Management**—A division within the U.S. Department of the Interior.

**Canopy**—A layer of foliage in a forest stand. This most often refers to the uppermost layer of foliage, but it can be used to describe lower layers in a multistoried stand.

**Clearcut**—A harvest in which all or almost all of the trees are removed in one cutting.

**Coarse woody debris**—Portion of a tree that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.

**Colonization**—The establishment of a species in an area not currently occupied by that species. Colonization often involves dispersal across an area of unsuitable habitat.

**Community**—(1) Pertaining to human associations based on social interactions, shared interests, norms, or values, or geography, (2) Pertaining to plant or animal species living in close association and interacting as a unit. (2) S/E

**Conifer**—A tree belonging to the order Gymnospermae, comprising a wide range of trees that are mostly evergreens. Conifers bear cones (hence, coniferous) and needle-shaped or scalelike leaves.

**Connectivity**—A measure of the extent to which conditions among late-stage old-growth forest areas (LSOG) provide habitat for breeding, feeding, dispersal, and movement of LSOG-associated wildlife and fish species (see LSOG forest).

**Conservation**—The process or means of achieving recovery of viable populations.

**Conservation strategy**—A management plan for a species, group of species, or ecosystem that prescribes standards and guidelines that if implemented provide a high likelihood that the species, groups of species, or ecosystem, with its full complement of species and processes, will continue to exist well distributed throughout a planning area, that is, a viable population.

**Corridor**—A defined tract of land, usually linear, through which a species must travel to reach habitat suitable for reproduction and other life-sustaining needs.

**Cover**—Vegetation used by wildlife protection from predators, or to mitigate weather conditions, or to reproduce. May also refer to the protection of the soil and the shading provided to herbs and forbs by vegetation.

**Cumulative effects**—Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such

other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period.

**Debris flow (debris torrent)**—A rapid moving mass of rock fragments, soil, and mud, with more than half of the particles being larger than sand size.

**Demography**—The quantitative analysis of population structure and trends; population dynamics.

**Desired future condition**—An explicit description of the physical and biological characteristics of aquatic and riparian environments believed necessary to meet fish, aquatic ecosystem, and riparian ecosystem objectives.

**Diameter at breast height**—The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

**Dispersal**—The movement, usually one way and on any time scale, of plants or animals from their point of origin to another location where they subsequently produce offspring.

**Distribution (of a species)**—The spatial arrangement of a species within its range.

**Disturbance**—A force that causes significant change in structure and composition through natural events such as fire, flood, wind, or earthquake, mortality caused by insect or disease outbreaks, or by human caused events, for example, the harvest of forest products.

**Diversity**—The variety, distribution, and abundance of different communities or species within an area (see Biological diversity).

**Down log**—Portion of a tree that has fallen or been cut and left in the woods. Particularly important as habitat for some late-successional/oldgrowth-associated species.

**Draft environmental impact statement (DEIS)**—The draft statement of environmental effects that is required for major Federal action under Section 102 of the National Environment Policy Act, and released to the public and other agencies for comment and review.

**Drainage**—An area (basin) mostly bounded by ridges or other similar topographic features, encompassing part, most, or all of a watershed and enclosing some 5,000 acres (see Subdrainage and Forest watershed).

**Ecosystem**—A unit comprising interacting organisms considered together with their environment (for example, marsh, watershed, and lake ecosystems).

**Ecosystem diversity**—Various species and ecological processes that occur in different physical settings.

**Ecosystem management**—A strategy or plan to manage ecosystems to provide for all associated organisms, as opposed to a strategy or plan for managing individual species.

**Edge**—Where plant communities meet or where successional stages or vegetative conditions with plant communities come together.

**Endangered species**—Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.

**Environmental assessment**—A systematic analysis of site-specific activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required; and to aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary.

**Environmental impact**—The positive or negative effect of any action on a given area or resource.

**Environmental impact statement (EIS)**—A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major Federal action.

**Environmental Protection Agency**—An independent agency of the U.S. Government (cabinet-level status is pending).

**Ephemeral streams**—Streams that contain running water only sporadically, such as during and following storm events.

**Even-aged silviculture**—Manipulation of a forest stand to achieve a condition in which trees have less than a 20-year age difference. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for harvesting. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

**Experimental forests**—Forest tracts, generally on National Forests, designated as areas where research and experiments involving forestry, wildlife, and related disciplines can be conducted.

**Extirpation**—The elimination of a species from a particular area.

**Filter—Coarse**

**Fine**

**Final environmental impact statement (FEIS)**—The final report of environmental effects of proposed action on an area of land. This is required for major Federal actions

under Section 102 of the National Environmental Policy Act. It is a revision of the draft environmental impact statement to include public and agency responses to the draft.

**Forest Ecosystem Management Assessment Team (FEMAT)**—As assigned by President Clinton, the team of scientists, researchers, and technicians from seven Federal agencies who created Forest Ecosystem Management Assessment Team report (1993).

**Function**—The flow of mineral nutrients, water, energy, or species.

**Geomorphic**—Pertaining to the form or shape of and those processes that affect the surface of the earth.

**Geographic information system**—A computer system capable of storing and manipulating spatial (that is, mapped) data.

**Green-tree retention**—A stand management practice in which live trees as well as snags and large down wood are left as biological legacies within harvest units to provide habitat components over the next management cycle.

**Guideline**—A policy statement that is not a mandatory requirement (as opposed to a standard, which is mandatory).

**Habitat**—The place where a plant or animal naturally or normally lives and grows.

**Habitat diversity**—The number of different types of habitat within a given area.

**Habitat fragmentation**—The breaking up of habitat into discrete islands through modification or conversion of habitat by management activities.

**Impact**—A spatial or temporal change in the environment caused by human activity.

**Interagency Scientific Committee (ISC)—**A committee of scientists that was established by the Forest Service, Bureau of Land Management, Fish and Wildlife

Service, and National Park Service to develop a conservation strategy for northern spotted owls.

**Interdisciplinary team—**A group of individuals with varying areas of specialty assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad enough to adequately analyze the problem and propose action.

**Intermittent stream**—Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two criteria.

**Issue**—A matter of controversy or dispute over resource management activities that is well defined or topically discrete. Addressed in the design of planning alternatives.

**Key watershed**—As defined by National Forest and Bureau of Land Management District fish biologists, a watershed containing (1) habitat for potentially threatened species or stocks of anadromous salmonids or other potentially threatened fish, or (2) greater than 6 square miles with high-quality water and fish habitat.

**Land allocation**—The specification in forest plans of where activities, including timber harvest, can occur on a National Forest or Bureau of Land Management District.

**Landscape**—A heterogeneous land area with interacting ecosystems that are repeated in similar form throughout.

**Large woody debris**—Pieces of wood larger than 10 feet long and 6 inches in diameter, in a steam channel.

**Late-successional old-growth habitat**—A forest in its mature or old growth stages.

**Late-successional reserve**—A forest in its mature or old-growth stages that has been reserved under each a management option (see Old growth forest and Succession).

**Low level green tree retention**—A regeneration harvest designed to retain only enough green trees and other structural components (snag, coarse woody debris, etc.) to result in the development of stands that meet old-growth definitions within 100 to 120 years after harvest entry, considering overstory mortality.

**Management activity**—An activity undertaken for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

**Marbled murrelet**—A small robin-sized seabird (*Brachyramphus marmoratus*) that nests in old-growth forests within 50 miles of marine environments. Proposed for listing as a threatened species by the U.S. Fish and Wildlife Service.

**Marbled murrelet habitat**—Primarily late-successional/old growth forest with trees that are large enough and old enough to develop broad crowns and large limbs, which provide substrates for nests. Also includes some younger stands in which tree limbs are deformed by dwarf mistletoe, creating broad platforms.

**Matrix**—Federal lands outside of reserves, withdrawn areas, and managed late-successional areas.

**Mature stand**—A mappable stand of trees for which the annual net rate of growth has peaked. Stands are generally greater than 80 to 100 years old and less than 180 to 200 years old. Stand age, diameter of dominant trees, and stand structure at maturity differ by forest cover types and local site conditions. Mature stands generally contain trees with a smaller average diameter, less age class variation, and less structural complexity than old-growth stands of the same forest type. Mature stages of some forest types are suitable

habitat for spotted owls. However, mature forests are not always spotted owl habitat, and spotted owl habitat is not always mature forest.

**Model**—An idealized representation of reality developed to describe, analyze, or understand the behavior of some aspect of it; a mathematical representation of the relations under study. The term model is applicable to a broad class of representations, ranging from a relatively simple qualitative description of a system or organization to a highly abstract set of mathematical equations.

**Monitoring**—The process of collecting information to evaluate if objective and anticipated or assumed results of a management plan are being realized or if implementation is proceeding as planned.

**Monitoring program**—The administrative program used for monitoring.

**Multiple use**—Management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. Making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions. The use of some land for less than all of the resources. A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values. Harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment.

This combination is not necessarily the one that will give the greatest dollar return or greatest unit output.

**Multistoried**—Forest stands that contain trees of various heights and diameter classes and therefore support foliage at various heights in the vertical profile of the stand.

**National Environmental Policy Act**—An act passed in 1969 to declare a national policy that encourages productive and enjoyable harmony between humankind and the environment, promotes efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, enriches the understanding of the ecological systems and natural resources important to the nation, and establishes a Council on Environmental Quality (The Principal Laws Relating to Forest Service Activities, Agric. Handb. 453. USDA Forest Service 1993).

**National Forest Management Act**—A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act, requiring the preparation of forest plans and the preparation of regulations to guide that development.

**National Marine Fisheries Service**—A division within the U.S. Department of Commerce.

**National Park Service**—A division within the U.S. Department of the Interior.

**Northern spotted owl**—One (*Strix occidentalis caurina*) of three subspecies of the spotted owl that ranges from southern British Columbia, Canada, through western Washington and Oregon, and into northwestern California. Listed as a threatened species by the U.S. Fish and Wildlife Service.

**Old growth**—This stage constitutes the potential plant community capable of existing on a site given the frequency of natural disturbance events. For forest communities, this

stage exists from about age 200 until when stand replacement occurs and secondary succession begins again. Depending on fire frequency and intensity, old-growth forests may have different structures, species composition, and age distributions. In forests with longer periods between natural disturbance, the forest structure will be more even-aged at late mature or early old-growth stages.

**Old-growth forest**—A forest stand usually at least 180 to 220 years old with moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); many large snags; and heavy accumulations of wood, including large logs on the ground.

**Old-growth stand**—A mappable area of old-growth forest.

**Overstory**—Trees that provide the uppermost layer of foliage in a forest with more than one roughly horizontal layer of foliage.

**Owl region**—The geographic area within the range of the northern spotted owl.

**Peak flow**—The highest amount of stream or river flow occurring in a year or from a single storm event.

**Perennial stream**—A stream that typically has running water on a year around basis.

**Physiographic province**—A geographic area having a similar set of biophysical characteristics and processes because of the effects of climate and geology that result in patterns of soils and broad-scale plant communities. Habitat patterns, wildlife distributions, and historical land use patterns may differ significantly from those of adjacent provinces.

**Planning area**—All the lands within a Federal agency's management boundary addressed in land management plans.

**Plant association**—A plant community type based on land management potential, successional patterns, and species composition.

**Plant community**—An association of plants of various species found growing together in different areas with similar site characteristics.

**Population**—A collection of individual organisms of the same species that potentially interbreed and share a common gene pool. Population density refers to the number of individuals of a species per unit area, population persistence to the capacity of the population to maintain sufficient density to persist, well distributed, over time (see Viable population).

**Population dynamics**—The aggregate of changes that occur during the life of a population. Included are all phases of recruitment and growth, senility, mortality, seasonal fluctuation in biomass, and persistence of each year class and its relative dominance, and the effects that any or all of these factors exert on the population.

**Population viability**—Probability that a population will persist for a specified period across its range despite normal fluctuations in population and environmental conditions.

**Predator**—Any animal that preys externally on others by hunting, killing, and generally feeding on a succession of hosts, that is, the prey.

**Prescribed fire**—A fire burning under specified conditions that will accomplish certain planned objectives. The fire may result from planned or unplanned ignitions.

**Process**—Change in state of an entity.

**Range (of a species)**—The area or region over which an organism occurs.

**Record of decision**—A document separate from but associated with an environmental impact statement that states the management decision, identifies all alternatives including both the environmentally preferable and preferred alternatives, states whether all practicable means to avoid environmental harm from the preferred alternative have been adopted, and if not, why not.

**Recovery**—Action that is necessary to reduce or resolve the threats that caused a species to be listed as threatened or endangered.

**Reforestation**—The natural or artificial restocking of an area with forest trees; most commonly used in reference to artificial stocking.

**Refugia**—Locations and habitats that support populations of organisms that are limited to small fragments of their previous geographic range (that is, endemic populations).

**Regeneration**—The actual seedlings and saplings existing in a stand; or the act of establishing young trees naturally or artificially.

**Region**—A Forest Service administrative unit. For example, the Pacific Northwest (Region 6), includes National Forests in Oregon and Washington, and the Pacific Southwest Region (Region 5), that includes National Forests in California.

**Regional guide**—The guide developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (National Forest Management Act). Regional guides provide standards and guidelines for addressing major issues and management concerns that need to be considered at the regional level to facilitate National Forest planning.

**Regulation models—**

**Riparian area**—A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it. This includes flood plain, woodlands, and all areas within a horizontal distance of about 100 feet from the normal line of high water of a steam channel or from the shoreline of a standing body of water.

**Riparian reserves**—Designated riparian areas found outside the latesuccessional reserves.

**Riparian zone**—Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and intermittent water, associated high water tables, and soils that exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows.

**Risk analysis**—A qualitative assessment of the probability of persistence of wildlife species and ecological systems under various alternatives and management options; generally also accounts for scientific uncertainties.

**Rotation**—The planned number of years between regeneration of a forest stand and its final harvest (regeneration cut or harvest). The age of a forest at final harvest is referred to as rotation age. In the Douglas fir region, an extended rotation is 120 to 180 years, a long rotation 180 years.

**Scale—**

**Sensitive species**—Those species that (1) have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species or (2) are on an official state list or (3) are recognized by the USDA

Forest Service or other management agency as needing special management to prevent their being placed on Federal or state lists.

**Seral stage—**See glossary table 1 for three alternative definitions

**Shade-tolerant species**—Plant species that have evolved to grow well in shade.

**Silvicultural practices (or treatments or system)**—The set of field techniques and general methods used to modify and manage a forest stand over time to meet desired conditions and objectives.

**Silvicultural prescription**—A professional plan for controlling the establishment, composition, constitution, and growth of forests.

**Silviculture**—The science and practice of controlling the establishment, composition, and growth of the vegetation of forest stands. It includes the control or production of stand structures such as snags and down logs, in addition to live vegetation.

**Simulation**—The use of a computer or mathematical model to predict effects from a management option given different sets of assumptions about population vital rates.

**Site productivity**—The ability of a geographic area to produce biomass, as determined by conditions (for example, soil type and depth, rainfall, temperature) in that area.

**Snag**—Any standing dead, partially dead, or defective (cull) tree at least 10 inches in diameter at breast height and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

**Socioeconomic**—Pertaining to, or signifying the combination or interaction of, social and economic factors.

**Soil compaction**—An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure.

**Soil productivity**—Capacity or suitability of a soil, for establishment and growth of a specified crop or plant species, primarily through nutrient availability.

**Species**—(1) A group of individuals that have their major characteristics in common and are potentially interfertile. (2) The Endangered Species Act defines species as including any species or subspecies of plant or animal. Distinct populations of vertebrates also are considered to be species under the act.

**Species diversity**—The number, different kinds, and relative abundance of species.

**Stand (tree stand)**—An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition so that it is distinguishable from the forest in adjoining areas.

**Stand condition**—A description of the physical properties of a stand such as crown closure or diameters.

**Stand-replacing event**—A disturbance that is severe enough over a large enough area (for example, 10 acres) to virtually eliminate an existing stand of trees and initiate a new stand.

**Standards and guidelines**—The primary instructions for land manager.
Standards address mandatory actions, while guidelines are recommended actions necessary to a land management decision.

**Stochastic**—Random, uncertain; involving a random variable.

**Stocked-stocking**—The degree an area of land is occupied by trees as measured by basal area or number of trees.

**Stream order**—A hydrologic system of stream classification. Each small unbranched tributary is a first-order stream. Two first-order streams join to make a second-order stream. A third-order stream has only first-and second-order tributaries, and so forth.

**Stream reach**—An individual first-order stream or a segment of another stream that has beginning and ending points at a stream confluence. Reach end points are normally designated where a tributary confluence changes the channel character or order. Although reaches identified by the Bureau of Land Management are variable in length, they normally have a range of 0.5 to 1.5 miles in length unless channel character, confluence distribution, or management considerations require variance.

**Successional stage**—A stage or recognizable condition of a plant community that occurs during its development from bare ground to climax. For example, coniferous forests in the Blue Mountains progress through six recognized stages: grass-forb, shrub-seedling, pole-sapling, young, mature, and old growth.

**Structure**—The various horizontal and vertical physical elements of the forest.

**Stumpage**—The value of standing timber.

**Succession**—A series of dynamic changes by which one group of organisms succeeds another through stages leading to potential natural community or climax. An example is the development of series of plant communities (called seral stages) following a major disturbance.

**Suppression**—The action of extinguishing or confining a fire.

**Surface erosion**—A group of processes whereby soil materials are removed by running water, waves and currents, moving ice, or wind.

**Sustainable harvest**—A harvest volume that can be maintained through time without decline.

**Take**—Under the Endangered Species Act, take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an animal, or to attempt to engage in any such conduct.

**Threatened species**—Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Timber production**—The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use other than for fuelwood.

**Unique ecosystems**—Ecosystems embracing special habitat features such as beaches and dunes, talus slopes, meadows, and wetlands.

**U.S. Department of Agriculture (USDA)**—Federal land management agency whose main mission is multiple use of lands under its jurisdiction.

**U.S. Department of the Interior (USDI)**—Federal land management agency whose main mission is multiple use of lands under its jurisdiction.

**Viability**—The ability of a wildlife or plant population to maintain sufficient size so that it persists over time in spite of normal fluctuations in numbers; usually expressed as a probability of maintaining a specific population for a specified period.

**Viable population**—A wildlife or plant population that contains an adequate number of reproductive individuals appropriately distributed on the planning area to ensure the long-term existence of the species.

**Water quality**—The chemical, physical, and biological characteristics of water.

**Watershed**—The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.

**Watershed analysis**—A systematic procedure for characterizing watershed and ecological processes to meet specific management and social objectives. Watershed analysis is a stratum of ecosystem management planning applied to watersheds of about 20 to 200 square miles.

**Watershed restoration**—Improving current conditions of watersheds to restore degraded fish habitat and provide long-term protection to aquatic and riparian resources.

**Well distributed**—A geographic distribution of habitats that maintains a population throughout a planning area and allows for interaction of individuals through periodic interbreeding and colonization of unoccupied habitats.

**Wetlands**—Areas that are inundated by surface water or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction (Executive Order 11990). Wetlands generally include, but are not limited to, swamps, marshes, bogs, and similar areas.

**Wilderness**—Areas designated by Congressional action under the 1964 Wilderness Act. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are

protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, education, scenic, or historical value as well as ecologic and geologic interest.

**Wildfire**—Any wildland fire that is not a prescribed fire.

**Windfall**—Trees or parts of trees felled by high winds (see also Blowdown and Windthrow).

**Windthrow**—Synonymous with windfall, blowdown.

**Young stands**—Forest stands not yet mature, generally, less than 50 to 80 years old; typically 20 to 40 years old.

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Findings and conclusions in this report are in press and subject to change prior to formal dissemination.

**Metric Equivalents**

| When you know: | Multiply by: | To find: |
|---|---|---|
| | | |
| Inches (in) | 2.54 | Centimeters |
| Feet (ft) | .3048 | Meters |
| Cubic feet ($ft^3$) | 28.3 | Cubic meters |
| Miles | 1.609 | Kilometers |
| Acres (ac) | .405 | Hectares |
| Board feet, log scale | .0045 | Cubic meter, log |
| Board feet, full sawn lumber scale | .0024 | Cubic meter, lumber |
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